

**BY ORDER OF THE COMMANDER  
AIR COMBAT COMMAND**



**AIR FORCE INSTRUCTION 21-103**

**AIR COMBAT COMMAND  
Supplement**

**ADDENDUM\_BB**

**7 NOVEMBER 2013**

**Maintenance**

**EQUIPMENT INVENTORY, STATUS, AND  
UTILIZATION REPORTING SYSTEM/F-22A  
MINIMUM ESSENTIAL SUBSYSTEM LIST  
(MESL)**

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**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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This MESL compliments AFI 21-103, *Equipment Inventory, Status, and Utilization Reporting*. This Addendum applies to all F-22A ACC, Air National Guard (ANG) and Air Force Reserve Command (AFRC) units and members. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with (IAW) Air Force Manual (AFMAN) 33-363, *Management of Records*. Contact supporting records managers as required. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using Air Force Form 847, *Recommendation for Change of Publication*, to HQ ACC/A4V22, 204 Dodd Blvd., Suite 112, Langley AFB VA 23665-2791, and send information copies to the applicable Office of Collateral Responsibility (OCR). This publication may not be supplemented or further implemented/extended.

**SUMMARY OF CHANGES**

This document has been substantially revised and must be completely reviewed. Major changes include: Note 11 is revised to allow PMC for TF coded aircraft and is now note 8. Note 16 is now note \* applicable to all columns and all lines and was revised to further standardize the debrief process and aircraft status reporting.

**1. General.** The MESL is the basis of status reporting IAW AFI 21-103. MESLs lay the ground work for reporting the status of aircraft availability. They list the minimum essential systems and subsystems that must work on an aircraft for it to perform specifically assigned unit wartime, training, test or other missions. Mission Ready Available (MRA) is used in readiness Status of Resources and Training System (SORTS) reporting only and denotes Mission Capable (MC) aircraft capable of being configured for a contingency mission IAW COMACC OMNIBUS Plan.

1.1. Qualifying notes are used to define aircraft exceptions and help explain complex degraded mission systems such as suspension equipment.

1.2. Aircraft status for generation and deployment. The goal is to generate or deploy Fully Mission Capable (FMC) aircraft, recognizing status actually achieved may be less than FMC. A Not Mission Capable (NMC) aircraft may be deployed provided it is safe for flight and can be configured and generated to MRA status at an employment site.

1.3. All ACC units will generate, or deploy and regenerate, using ACC MESLs. Major Command (MAJCOM) differences in MESLs are acknowledged. Upon actual deployment to another MAJCOM theater, the gaining MAJCOM has the responsibility to resource and specify the unit's requirements and resource the differences in support/mission equipment.

1.4. Reading the MESL. A MESL is read by comparing the systems stated by Logistics Control Number (LCN) against the FSL and all applicable BSLs across the page. Each unit's Design Operational Capability (DOC) statement determines applicability of BSL columns. The aircraft MESLs incorporate all ACC assigned aircraft; therefore, it is important to compare only those columns listed in the MESL which are applicable to the unit's assigned aircraft. For example, units with CC (wartime) coded aircraft would determine and report status using only the FSL and BSL columns related to their DOC statement. Units with TF (training) coded aircraft would determine and report status using only the FSL and TNG columns, and units with CB (evaluation) coded aircraft would determine and report status using only the FSL and TST columns. Units with multiple coded aircraft will ensure status is reported using the MESL columns appropriate to the individual aircraft assignment code.

**Table 1. F-22A AIRCRAFT SYSTEMS MESL.**

				BSL				
NO.	LCN	SYSTEM/SUBSYSTEM	FSL*	ADC*	ASC*	ASY*	TNG*	TST*
1.	A2100	Environmental Control	X	X	X	X	X	X
2.	A2400	Electrical Power	X	X	X	X	X	X
3.	A2500	Equipment/Furnishings	X	X	X	X	X	X
4.	A2600	Fire/Overheat	X	X	X	X	X	X
5.	A2700	Flight Controls	X	X	X	X	X	X
6.	A2800	Fuel System	X	X	X	X	X	X
7.	A2900	Hydraulic Power	X	X	X	X	X	X
8.	A3000	Ice & Rain Protection	X	X	X	X	X	X
9.	A3100	Indicating & Recording	X	X	X	X	X	X
10.	A3200	Landing Gear	X	X	X	X	X	X
11.	A3300	Lighting	X	X2	X2	X2	X2	X2
12.	A3400	Navigation	X	X	X	X	X	X
13.	A3420	TACAN	X	X	X	X	X	X
14.	A3500	Oxygen	X	X	X	X	X	X
15.	A3600	Pneumatic Systems	X	X	X	X	X	X
16.	A4200	Integrated Avionics	X	X3,11	X3,11	X3,11	X3	X3
17.	A4230	Display Group	X	X3	X3	X3	X3	X3
18.	A4600	Vehicle Management System (VMS)	X	X3	X3	X3	X3	X3
19.	A4800	Comm/Nav/Identification (CNI)	X1	X1	X1	X1	X1	X1
20.	A4817	IFDL	X9	X9	X9	X9	X9	X9
21.	A4818	GPS	X	X	X	X	X	X
22.	A4819	ILS	X					

23.	A4900	Aux Power	X	X	X	X	X	X	
24.	A5100	Low Observables	X	X8	X8	X8	X8	X8	
25.	A5200	Doors	X	X	X	X	X	X	
26.	A5300	Fuselage	X	X	X	X	X	X	
27.	A5500	Stabilizers	X	X	X	X	X	X	
28.	A5600	Canopy System	X	X	X	X	X	X	
29.	A5700	Wings	X	X	X	X	X	X	
30.	A7100	Power Plant	X	X	X	X	X	X	
31.	A7200	Engine Assy-Turbofan	X	X	X	X	X	X	
32.	A7300	Engine Fuel Controls	X	X	X	X	X	X	
33.	A7400	Engine Electrical/Ignition	X	X	X	X	X	X	
34.	A7500	Engine Tubes Manifolds	X	X	X	X	X	X	
35.	A7600	Engine Controls	X	X	X	X	X	X	
36.	A7700	Instrumentation/Sensors	X	X	X	X	X	X	
37.	A7800	Engine Nozzle Module	X	X	X	X	X	X	
38.	A7900	Engine oil System	X	X	X	X	X	X	
39.	A8000	Engine Starting System	X	X	X	X	X	X	
40.	A8300	Accessory Gearbox	X	X	X	X	X	X	
41.	A9400	Weapons	X	X4,5	X5,6	X4,5	X4,5,6	X4,5,6	
42.	A9450	Gun System	X10	X10	X10	X10			
43.	A9470	Radar (4th Gen A9480)	X	X	X	X	X	X	
44.	A9500	Crew Escape & Safety	X	X	X	X	X	X	
45.	A9900	EW	X	X	X	X	X	X	
46.	A9910	RW/NBILST	X	X	X	X	X	X	
47.	A9920	IRCM/EXCM	X	X	X	X			
48.	A9950	MLD	X7	X7	X7	X7		X7	
TNG: ONLY APPLIES TO ACFT IN ASSIGNMENT CODE TF (TRAINING)									
TST: ONLY APPLIES TO ACFT IN ASSIGNMENT CODE CB (EVALUATION)									
<b>QUALIFYING NOTES:</b>									
1. Both radios and backup must have full functionality (UHF, VHF, secure, Have Quick) for FMC. Both radios must have partial capability; one (1) UHF and one (1) VHF or one (1) radio must be fully functional for PMC.									

2. Exterior lighting required per AFI 11-202V3, <i>General Flight Rules</i> . Landing light and all strobe lights required for PMC.
3. Two (2) of three (3) operational SMFDs and PMFD, HUD, RUFD required for PMC.
4. For Air to Air configuration any combination of six (6) of the eight (8) internal weapons stations to include a minimum of one (1) Aim 9M station required for PMC.
5. Inoperative weapons station 2 and or 11 is considered PMC.
6. For Air-to Ground configuration only six (6) internal weapons stations are available and All (6) of these stations are required for FMC. One (1) AIM-9M station may be inoperative for PMC.
7. Five (5) of six (6) MLD sensors required for PMC.
8. During peacetime operations, LO system reporting codes for combat coded (CC) aircraft are FMC or NMC-Airworthy. The F-22 LO system is FMC when the Signature Assessment System (SAS) margins-used are < 100% and F119 LO coatings are within Engine SAS (ESAS) limits. The LO system status on CC aircraft is NMC-Airworthy when the SAS margin is > 100% or engine coating loss exceeds ESAS limits, as long as un-repaired LO damages do not affect structural integrity and/or Safety of Flight. PMC for the LO system on CC aircraft is only authorized during combat/contingency/alert operations (to include theater security packages/cooperation missions). PMC for the LO system on training coded aircraft is authorized provided un-repaired LO anomalies do not affect applicable ACC/A3 training syllabi, structural integrity, and/or safety of flight.
9. Loss of one IFDL MBA is PMC.
10. Inoperative gun system is PMC.
11. DMVR malfunctions that only affect recording of displays are PMC.
* For FRCs that assert a system "Degrade" in conjunction with pilot observed performance degradation, the aircraft status will be reported as PMC. For FRCs which asserts a system "FAIL" in conjunction with pilot observed performance degradation, the aircraft will be reported as NMC.

GILMARY M. HOSTAGE III, General, USAF  
Commander

**Attachment 1****GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

AFI 21-103, *Equipment Inventory, Status, and Utilization Reporting*, 26 January 2012

***Prescribed Forms***

This addendum does not prescribe any forms.

***Adopted Forms***

AF Form 847, *Recommendation of Change to Publication*

***Abbreviations and Acronyms***

**ACC**—Air Combat Command

**ADC**—Air Defense, Conventional

**AIM**—Air Intercept Missile

**ASC**—Air to Surface, Conventional

**AFRC**—Air Force Reserve Command

**AFRIMS**—AF Records Information Management System

**ANG**—Air National Guard

**BSL**—Basic System Lists

**CNI**—Communication Navigation Identification

**DOC**—Design Operational Capability

**ESAS**—Engine Signature Assessment System

**EW**—Electronic Warfare

**EXCM**—External Countermeasure

**FMC**—Fully Mission Capable

**FSL**—Full System List

**GINs**—Global Inertial Navigation System

**HUD**—Head Up Display

**HQ**—Headquarters

**IAW**—In Accordance With

**IFDL**—In Flight Data Link

**ILS**—Instrument Landing System

**IRCM**—Infrared Countermeasure

**LCN**—Logistics Control Number

**LO**—Low Observable  
**MAJCOM**—Major Command  
**MBA**—Multi Beam Antenna  
**MC**—Mission Capable  
**MESLs**—Minimum Essential Systems Lists  
**MLD**—Missile Launch Detector  
**MRA**—Mission Ready Available  
**NBILST**—Narrow Beam Interleaved Search and Track  
**NMC**—Not Mission Capable  
**OCR**—Office of Collateral Responsibility  
**PMC**—Partial Mission Capable  
**PMFD**—Primary Multi-Function Display  
**RDS**—Records Disposition Schedule  
**RUFD**—Right Up Front Display  
**RW**—Radar Warning  
**SAS**—Signature Assessment System  
**SMFD**—Secondary Multi-Function Display  
**SORTS**—Status of Resources and Training System  
**TACAN**—Tactical Air Navigation  
**TNG**—Tactical Training  
**TST**—Developmental Test and Evaluation  
**UHF**—Ultra High Frequency  
**VFR**—Visual Flight Rules  
**VMS**—Vehicle Management System